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Watershed Inventory Report

*Phase 1 of the Watershed Improvement Plan –
REVISED DRAFT= May, 2026*

LAKESWOOD TOWNSHIP OCEAN COUNTY

Date Approved: *Pending (Dec 2025)*

Permit Number: NJG0148067

Stormwater Program Coordinator: Terence Vogt, PE

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Acronyms & Definitions

1. Acronyms

- i.* “BMP” – Best Management Practice
- ii.* “DO” – Dissolved Oxygen
- iii.* “EPA” – U.S. Environmental Protection Agency
- iv.* “GIS” – Geographic Information System
- v.* “HUC 14” – Hydrologic Unit Code 14
- vi.* “MS4” – Municipal Separate Storm Sewer System
- vii.* “MTD” – Manufactured Treatment Device
- viii.* “NJPDES” – New Jersey Pollutant Discharge Elimination System
- ix.* “NJ-WET” – New Jersey Watershed Evaluation Tool
- x.* “TDS” – Total Dissolved Solids
- xi.* “TMDL” – Total Maximum Daily Load
- xii.* “TSS” – Total Suspended Solids
- xiii.* “WIP” – Watershed Improvement Plan

2. Definitions

- i.* “HUC 14” or “hydrologic unit code 14” means an area within which water drains to a particular receiving surface water body, also known as a subwatershed, which is identified by a 14-digit hydrologic unit boundary designation, delineated within New Jersey by the United States Geological Survey. (N.J.A.C. 7:9B)
- ii.* “Municipal separate storm sewer” (or MS4 conveyance) means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) as defined in more detail at N.J.A.C. 7:14A-1.2.
- iii.* “Outfall” means any point source which discharges directly to waters of the United States and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels or other conveyances which connect segments of the same stream or other waters of the United States and are used to convey waters of the United States.
- iv.* “Storm drain inlet” means the point of entry into the storm sewer system.
- v.* “Stormwater” means water resulting from precipitation (including rain and snow) that runs off the land's surface, is transmitted to the subsurface, is captured by separate storm sewers or other sewerage or drainage facilities or is conveyed by snow removal equipment.
- vi.* “Stormwater facility” means stormwater infrastructure including, but not limited to, catch basins, infiltration basins, detention basins, green infrastructure (GI), filter strips, riparian buffers, infiltration trenches, sand filters, constructed wetlands, wet basins, bioretention systems, low flow bypasses, Manufactured Treatment Devices (MTDs), and stormwater conveyances.
- vii.* “Stormwater management basin” means a stormwater management basin as defined in N.J.A.C. 7:8.
- viii.* “Stormwater management measure” means a stormwater management measure as defined in N.J.A.C. 7:8.
- ix.* “Stormwater runoff” means water flow on the surface of the ground or in storm sewers, resulting from precipitation.

- x. “Total maximum daily load” or “TMDL” means a total maximum daily load formally established pursuant to Section 7 of the Water Quality Planning Act (N.J.S.A. 58:11A-7) and Section 303(d) of the Clean Water Act, 33 U.S.C. §§12512 et seq. A TMDL is the sum of individual wasteload allocations for point sources, load allocations for nonpoint sources of pollution, other sources such as tributaries or adjacent segments, and allocations to a reserve or margin of safety for an individual pollutant.

- xi. “Waters of the State” means the ocean and its estuaries, all springs, streams and bodies of surface or ground water, whether natural or artificial, within the boundaries of the State of New Jersey or subject to its jurisdiction” (see N.J.A.C. 7:9B-1.4)

Acknowledgements

Lakewood Township's Phase 1 Watershed Inventory Plan (WIP) report was prepared by Remington & Vernick, Engineers. Funding for preparation of the plan was provided by Lakewood Township.

This WIP Inventory Report was prepared using NJDEP-GIS stormwater infrastructure mapping data obtained by RVE; which was funded in-part by a \$25,000 NJDEP stormwater mapping grant provided to Lakewood Township.

Regional Collaboration

Lakewood Township has not collaborated regionally in the preparation of this Phase 1 Inventory Report. At Lakewood's discretion it may choose to collaborate for preparation of Phase 2 and Phase 3 reports due January 1, 2027 and December 31, 2027, respectively.

Introduction

The purpose of this watershed inventory report is to provide a comprehensive understanding of key, defining features within the watersheds throughout Lakewood Township. This involves gathering, organizing, and presenting information about existing conditions and infrastructure within each watershed. It aims to serve as a tool for informed decision-making, planning, and implementation of sustainable watershed management strategies aimed to protect and enhance the health of the watershed, its associated ecosystems, and the surrounding communities.

Located in Ocean County in central New Jersey, Lakewood Township covers over 25 square miles and is located south of Howell Township, east of Jackson Township and west of Brick Township. Its municipal address is 231 Third Street, Lakewood, NJ 08701.

According to *2020 Census data*, Lakewood, NJ had a population of approximately 135,389 to 139,851, with a racial breakdown of about 82% White, 1.7% Black, 0.7% Asian, and 11.4–11.7% Hispanic. The median age was 18, and about 30,548 households had an average of 4.5 people per household. Median household income was reported as \$69,521. An estimated 20.2% of people were reported below the property line. The estimated reported median value of owner-occupied units was \$444,600.

From the 2017 Lakewood, NJ Master Plan Re-examination (by T&M Associates)

There is a total of 25,915 parcels within the township. Of these parcels, a total of 20,908, or 80.7 percent, are Class 2 (Residential) parcels. Other land use classes within the township include: Class 1 (Vacant); Class 3A (Farmland [Regular]); Class 3B (Farmland [Qualified]); Class 4A (Commercial); Class 4B (Industrial); Class 4C (Apartments); Class 5A (Railroad [Class 1]); Class 15A (Public School); Class 15B (Other School); Class 15C (Public Property); Class 15D (Charitable); and, Class 15E (Cemetery).

Class 2 (Residential) properties represent 34.4 percent of the total area of real property in the township; this makes Class 2 (Residential) properties the largest land use, by acreage, in the township. Class 15C (Public Property) represent the second-largest land use of real property in the township, with approximately 21.5 percent of real property being comprised of Class 15C (Public Property), including the township's many parks, recreation and open space areas.

Lakewood Township contains portions of nine (9) HUC-14 watersheds, listed below:

- Toms River (Rt 70 to Hope Chapel Road)
- Toms River (Oak Ridge Parkway to Rt 70)
- Muddy Ford Brook
- Metedeconk R SB (Rt 9 to Bennetts Pond)
- Metedeconk R SB (confluence to Rt 9)
- Metedeconk R NB(Rt 9 to I-195)
- Metedeconk R NB (confluence to Rt 9)
- Metedeconk R (Beaverdam Ck to confl)
- Kettle Creek (below Lake Riviera outlet)
- Kettle Creek (above Lake Riviera outlet)

A 10th subwatershed, Muddy Ford Brook, exists north of the Township (in Monmouth County).

Water bodies within Lakewood Township include the following:

- Lake Carasaljo: A large lake located in the center of town, with a 4.5-mile perimeter and adjacent parkland for activities like fishing and swimming.
- Lake Shenandoah: A 48-acre lake in a county park, south of NJ Route 88.
- Lake Manetta: Located south of Lake Shenandoah, west of Route 9.
- Lake Wadill: Located south of Route 70, adjoining the Leisure Village Development.
- Ocean County Park Lake: A swimming lake located within the 565-acre Ocean County Park (north of NJ Route 88).

Additionally, the North Branch of the Metedeconk River flows through the northern portion of the Township.

Lakewood Township is located primarily within two Watershed Management Areas (WMAs) in New Jersey: the Barnegat Bay watershed (WMA 13) and the Metedeconk River watershed. The Barnegat Bay watershed covers all of Ocean County, where Lakewood is located, and parts of Monmouth County. The Barnegat Bay watershed is in the Atlantic Coastal region and is fed by a number of smaller watersheds, including the Metedeconk River.

Area(s) Prone to Flooding

Areas in Lakewood, NJ, with a history of flooding include **South Lakewood**, near the Brick Township line along **Lanes Mill Road**, and areas with smaller tributaries attached to the [Metedeconk River](#).

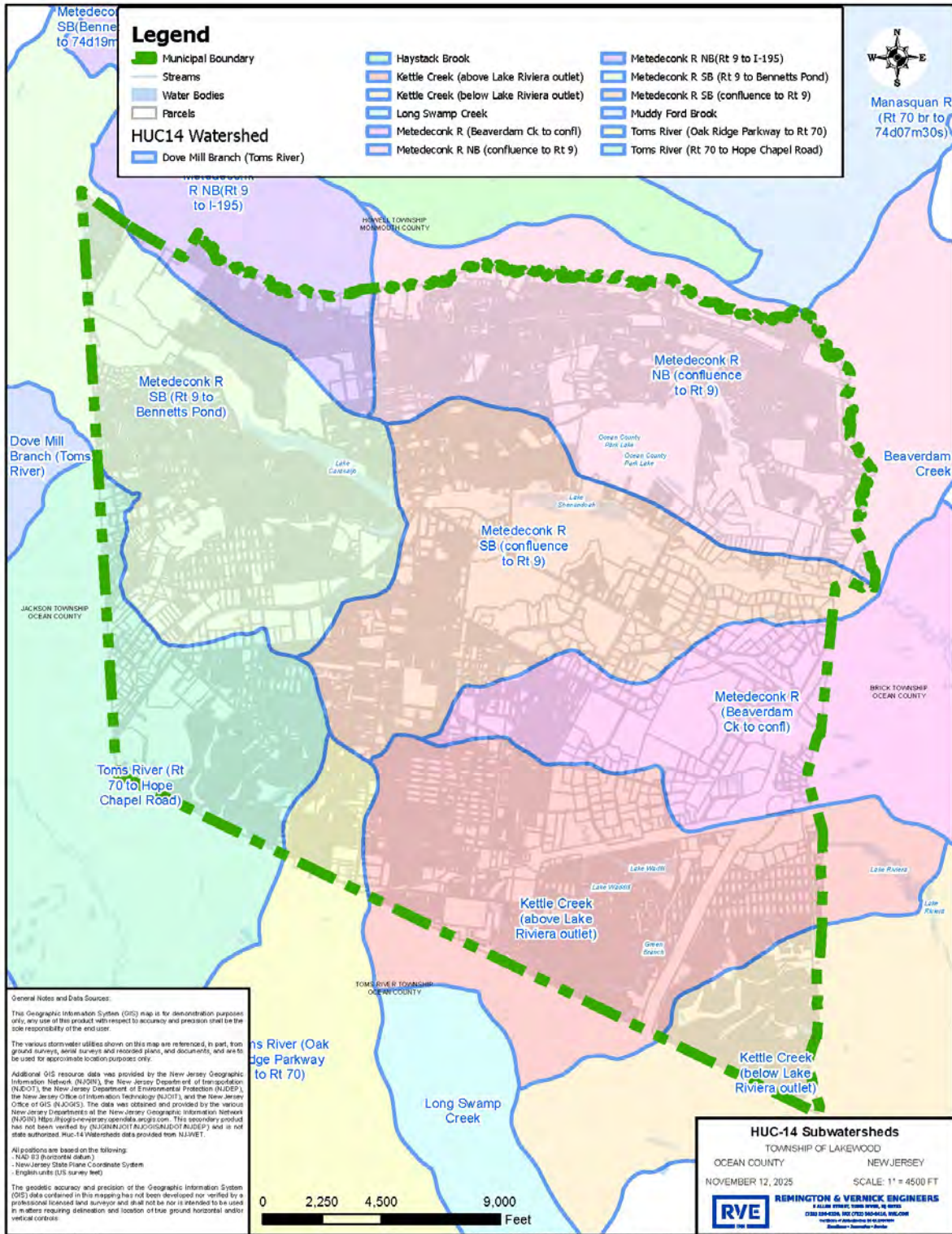
Additionally, the entire city has a moderate to high overall risk of flooding, and specific streets may be prone to flooding during heavy rains, sometimes due to stormwater runoff.

Specific areas include:

- **South Lakewood:** This neighborhood has a high flood risk, with properties concentrated in the area.
- **Lanes Mill Road:** This road has experienced several feet of flooding in the past, especially near the Brick Township border.
- **Metedeconk River tributaries:** Smaller waterways connected to the river can flood when the river is high, preventing adequate drainage.

First Street reported that less than 14% of Lakewood properties have risk for flooding from 100-year storm events, compared to a reported State average of 23.9%.

Figure 1: HUC14 Sub watersheds within the Township of Lakewood



Public Participation (Lakewood Township Phase 1 WIP Inventory Report)

- **List of stakeholders**

The Phase 1 Watershed Inventory Report (WIP) was prepared for Lakewood Township by Remington & Vernick, Engineers (RVE).

Stakeholders for this plan include Lakewood Township, Lakewood Township Committee, Lakewood Township Planning Board, Lakewood Township Zoning Board and the Lakewood Township Department of Public Works (DPW).

- **List of Previously Held Meetings (Lakewood January 15, 2026 Committee meeting)**

Lakewood Township is soliciting input from stakeholders, including residents, business owners, owners of private stormwater facilities (as per b.xiii below), and other municipalities and/or dischargers to the subwatershed(s) to be involved in the Plan development process. The first of two (2) public meetings was held during Lakewood's January 15, 2026 public meeting. No public comments were received during the (initial) January public meeting.

Lakewood Township shall conduct semi-annual public information sessions (in-person or virtual) throughout the development of the Plan. These sessions could be included on the agenda for Township Committee (or equivalent) meetings.

- **Summary of Feedback**

No public comments were received during the (initial) January public meeting.

- **Future Scheduled Meetings**

A second (and final) semi-annual public information session shall be held by or before July, 2026. The final draft of the Phase 1 Watershed Inventory Report will be available on Lakewood Township's Stormwater Webpage at the link below:

<https://www.lakewoodnj.gov/department/stormwater>

The second meeting date and time will be advertised on Lakewood's municipal website:

<https://www.lakewoodnj.gov/>

Receiving Surface Water Bodies & Water Quality Classifications

As illustrated in the enclosed “Surface Water Quality Classifications” Map, surface water bodies within the northern portion of the Township, including the North Branch of the Metedeconk River (along the northerly Township Border) are classified as *Freshwater 2 Trout Maintenance, Category One (FW2-TMCI)* designation. This acronym stands for:

- **FW2:** General freshwater classification for waters not designated as FW1 or Pinelands Waters.
- **TM:** Trout Maintenance. The water is designated for the support of trout throughout the year.
- **C1:** Category One. This is a high-level antidegradation designation that protects the water's quality from any measurable changes. This classification often includes waters with high ecological significance.

Surface water bodies within the central portion of the Township, including the South Branch of the Metedeconk River and tributaries are classified as *Freshwater 2 Non-Trout, Category One (FW2-NTCI)* designation. This acronym stands for:

- **FW2:** Freshwater 2 (a general classification for freshwaters not designated as FW1 or Pinelands waters).
- **NT:** Non-Trout (waters that are not capable of sustaining a natural or stocked trout population).
- **C1:** Category One. This is a high-level antidegradation designation that protects the water's quality from any measurable changes. This classification often includes waters with high ecological significance.

Surface water bodies in the south of the Township (including but not limited to Kettle Creek, Lake Waddle, and Green Branch) are classified as ***Freshwater Non-Trout, Saline Estuary (FW2-NT/SE1)***. This acronym stands for:

- **FW2:** Freshwater 2 (a general classification for freshwaters not designated as FW1 or Pinelands waters).
- **NT:** Non-Trout (waters that are not capable of sustaining a natural or stocked trout population).
- **SE1:** This sub-classification applies to the saline (saltwater) portion of the water body and designates it as "saline estuarine 1." This is the highest quality classification for saline waters, indicating it supports uses like swimming and shellfish harvesting.

Stormwater Outfall(s)

The information utilized in this section was gathered using the Municipal Stormwater Infrastructure data obtained from digitizing documents provided by the Township of Lakewood and field collected by Remington and Vernick Engineers as part of the Outfall and MS4 Infrastructure Mapping Projects from 2020 and 2025. This data was processed using ArcGIS software. Water Quality Classification Data was gathered from the NJDEP Open Data Portal. The data was accessed in December 2025. **The findings are summarized below in Table 2 and Figure 2.**

Table 2: Receiving Surface Water Bodies & Water Quality Classification

Local Outfall ID	Receiving Surface Water Body	Water Quality Classification
OF-001	Cedar Bridge Branch	FW2-NT
OF-078	Cotterals Brook UNT	FW2-NTC1
OF-079	Cotterals Brook UNT	FW2-NTC1
OF-080	Cotterals Brook UNT	FW2-NTC1
OF-081	Cotterals Brook UNT	FW2-NTC1
OF-082	Cotterals Brook UNT	FW2-NTC1
OF-088	Cabinfield Branch	FW2-NTC1
OF-103	North Branch Metedeconk River	FW2-TMC1
OF-105	Cabinfield Branch	FW2-NTC1
OF-106	Cabinfield Branch	FW2-NTC1
OF-107	Cabinfield Branch	FW2-NTC1
OF-108	Cabinfield Branch	FW2-NTC1
OF-109	South Branch Metedeconk River	FW2-NTC1
OF-110	Lake Shenandoah	FW2-NTC1
OF-111	South Branch Metedeconk River	FW2-NTC1
OF-112	South Branch Metedeconk River	FW2-NTC1
OF-113	South Branch Metedeconk River	FW2-NTC1
OF-114	Lake Manetta	FW2-NTC1
OF-115	Lake Manetta	FW2-NTC1
OF-118	Watering Place Brook	FW2-NTC1
OF-119	Watering Place Brook	FW2-NTC1
OF-121	Watering Place Brook	FW2-NTC1
OF-123	North Branch Metedeconk River	FW2-TMC1
OF-124	North Branch Metedeconk River	FW2-TMC1
OF-125	North Branch Metedeconk River	FW2-TMC1
OF-126	Watering Place Brook UNT	FW2-NTC1
OF-127	South Branch Metedeconk River UNT	FW2-NTC1
OF-128	South Branch Metedeconk River UNT	FW2-NTC1
OF-129	South Branch Metedeconk River UNT	FW2-NTC1
OF-130	South Branch Metedeconk River UNT	FW2-NTC1
OF-131	South Branch Metedeconk River UNT	FW2-NTC1
OF-132	South Branch Metedeconk River	FW2-NTC1
OF-133	South Branch Metedeconk River	FW2-NTC1
OF-134	South Branch Metedeconk River	FW2-NTC1
OF-135	South Branch Metedeconk River	FW2-NTC1
OF-136	South Branch Metedeconk River	FW2-NTC1
OF-137	South Branch Metedeconk River UNT	FW2-NTC1
OF-138	South Branch Metedeconk River UNT	FW2-NTC1
OF-139	Carasaljo Lake	FW2-NTC1
OF-140	South Branch Metedeconk River	FW2-NTC1

Local Outfall ID	Receiving Surface Water Body	Water Quality Classification
OF-141	South Branch Metedeconk River UNT	FW2-NTC1
OF-142	South Branch Metedeconk River UNT	FW2-NTC1
OF-143	Carasaljo Lake	FW2-NTC1
OF-144	Carasaljo Lake	FW2-NTC1
OF-145	Carasaljo Lake	FW2-NTC1
OF-146	Carasaljo Lake	FW2-NTC1
OF-147	Carasaljo Lake	FW2-NTC1
OF-148	Carasaljo Lake	FW2-NTC1
OF-149	Carasaljo Lake	FW2-NTC1
OF-150	Carasaljo Lake	FW2-NTC1
OF-151	Carasaljo Lake	FW2-NTC1
OF-152	Carasaljo Lake	FW2-NTC1
OF-153	Carasaljo Lake	FW2-NTC1
OF-154	Carasaljo Lake	FW2-NTC1
OF-155	Carasaljo Lake	FW2-NTC1
OF-156	Carasaljo Lake	FW2-NTC1
OF-157	Carasaljo Lake	FW2-NTC1
OF-158	Carasaljo Lake	FW2-NTC1
OF-159	Carasaljo Lake	FW2-NTC1
OF-160	Carasaljo Lake	FW2-NTC1
OF-161	Carasaljo Lake	FW2-NTC1
OF-162	Carasaljo Lake	FW2-NTC1
OF-163	Carasaljo Lake	FW2-NTC1
OF-164	Carasaljo Lake	FW2-NTC1
OF-165	South Branch Metedeconk River	FW2-NTC1
OF-166	South Branch Metedeconk River	FW2-NTC1
OF-167	South Branch Metedeconk River	FW2-NTC1
OF-168	South Branch Metedeconk River	FW2-NTC1
OF-169	South Branch Metedeconk River	FW2-NTC1
OF-170	South Branch Metedeconk River	FW2-NTC1
OF-171	North Branch Metedeconk River	FW2-TMC1
OF-172	North Branch Metedeconk River	FW2-TMC1
OF-174	North Branch Metedeconk River	FW2-TMC1
OF-175	North Branch Metedeconk River	FW2-TMC1
OF-176	North Branch Metedeconk River	FW2-TMC1
OF-177	South Branch Metedeconk River UNT	FW2-NTC1
OF-178	South Branch Metedeconk River UNT	FW2-NTC1
OF-201	Kettle Creek	FW2-NT/SE1
OF-204	Wetlands	
OF-239	Green Branch	FW2-NT/SE1
OF-240	Green Branch	FW2-NT/SE1
OF-241	Green Branch	FW2-NT/SE1
OF-242	Green Branch	FW2-NT/SE1

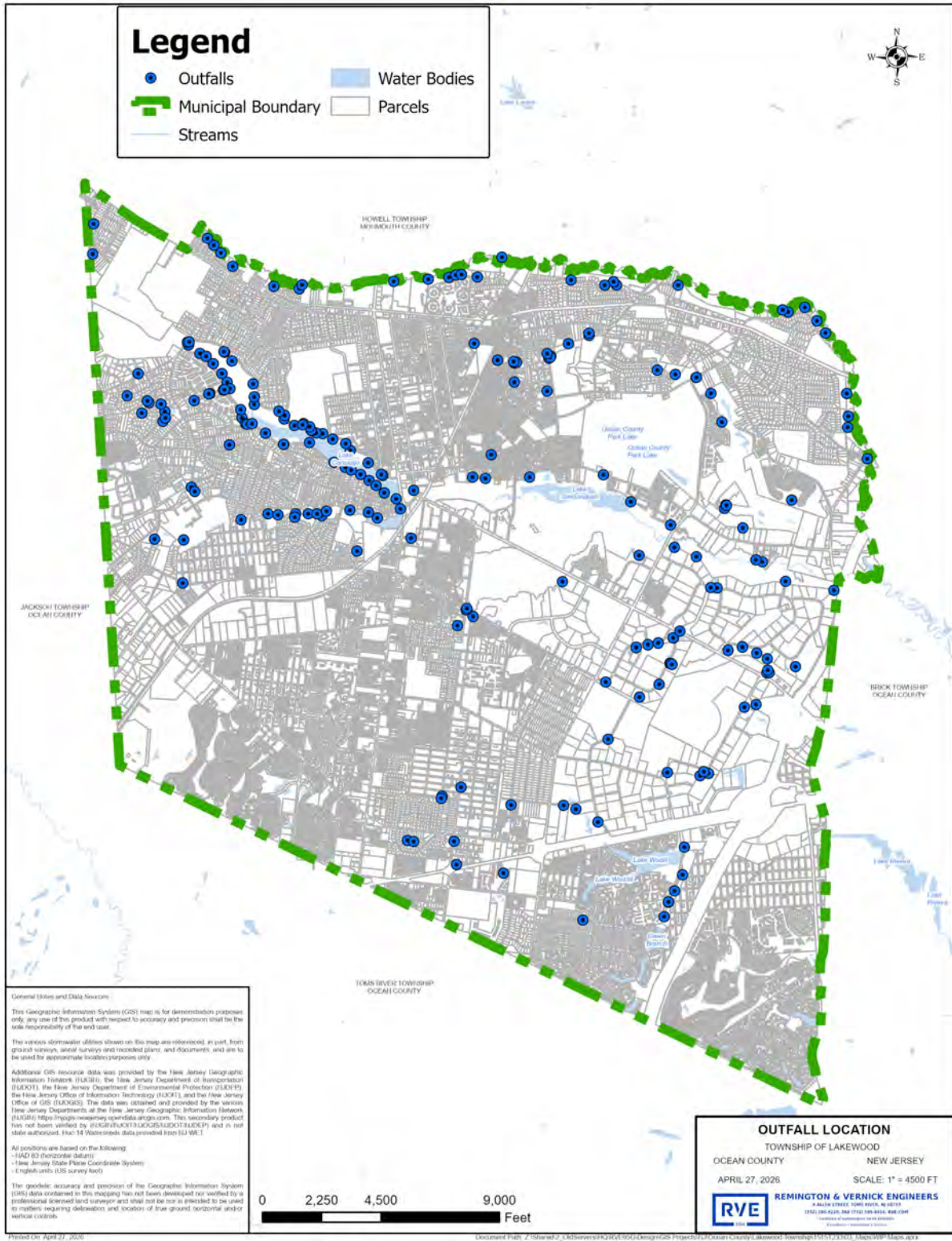
Local Outfall ID	Receiving Surface Water Body	Water Quality Classification
OF-252	Kettle Creek	FW2-NT/SE1
OF-269	Schoolhouse Branch	FW2-NTC1
OF-270	Schoolhouse Branch	FW2-NTC1
OF-271	Cabinfield Branch	FW2-NTC1
OF-272	Cabinfield Branch	FW2-NTC1
OF-274	North Branch Metedeconk River	FW2-NTC1
OF-275	North Branch Metedeconk River	FW2-TMC1
OF-276	North Branch Metedeconk River	FW2-TMC1
OF-278	North Branch Metedeconk River	FW2-TMC1
OF-279	North Branch Metedeconk River	FW2-TMC1
OF-280	North Branch Metedeconk River	FW2-TMC1
OF-281	North Branch Metedeconk River	FW2-TMC1
OF-282	North Branch Metedeconk River	FW2-TMC1
OF-283	Kettle Creek	FW2-NT/SE1
OF-284	Kettle Creek	FW2-NT/SE1
OF-286	Wetlands	
OF-287	Cedar Bridge Branch UNT	FW2-NT
OF-289	Cedar Bridge Branch UNT	FW2-NT
OF-290	Cedar Bridge Branch UNT	FW2-NT
OF-292	South Branch Metedeconk River	FW2-NTC1
OF-293	South Branch Metedeconk River	FW2-NTC1
OF-296	Cedar Bridge Branch	FW2-NT
OF-297	Cedar Bridge Branch	FW2-NT
OF-298	Cedar Bridge Branch	FW2-NT
OF-299	Cedar Bridge Branch	FW2-NT
OF-307	Cotterals Brook	FW2-NTC1
OF-308	Lake Manetta	FW2-NTC1
OF-309	Kettle Creek UNT	FW2-NT/SE1
OF-310	Cabinfield Branch	FW2-NTC1
OF-311	Cabinfield Branch	FW2-NTC1
OF-312	Cabinfield Branch	FW2-NTC1
OF-313	Kettle Creek UNT	FW2-NT/SE1
OF-314	Kettle Creek	FW2-NT/SE1
OF-315	Lake Shenandoah	FW2-NTC1
OF-316	Lake Shenandoah	FW2-NTC1
OF-317	Cabinfield Branch	FW2-NTC1
OF-318	Cabinfield Branch	FW2-NTC1
OF-319	Kettle Creek	FW2-NT/SE1
OF-320	Cedar Bridge Branch	FW2-NT
OF-321	Cedar Bridge Branch	FW2-NT
OF-322	Cedar Bridge Branch	FW2-NT
OF-332	Cabinfield Branch	FW2-NTC1
OF-336	North Branch Metedeconk River	FW2-TMC1

Local Outfall ID	Receiving Surface Water Body	Water Quality Classification
OF-337	North Branch Metedeconk River	FW2-TMC1
OF-352	Cotterals Brook UNT	FW2-NTC1
OF-353	Cotterals Brook UNT	FW2-NTC1
OF-356	Cedar Bridge Branch	FW2-NT
OF-357	Cedar Bridge Branch	FW2-NT
OF-358	Cedar Bridge Branch	FW2-NT
OF-359	Cedar Bridge Branch	FW2-NT
OF-360	Cedar Bridge Branch	FW2-NT
OF-361	Cedar Bridge Branch UNT	FW2-NT
OF-366	Cotterals Brook	FW2-NTC1
OF-368		
OF-372	Kettle Creek UNT	FW2-NT/SE1
OF-373	Cedar Bridge Branch UNT	FW2-NT
OF-381	South Branch Metedeconk River	FW2-NTC1
OF-382	South Branch Metedeconk River	FW2-NTC1
OF-383	South Branch Metedeconk River	FW2-NTC1
OF-384	South Branch Metedeconk River UNT	FW2-NTC1
OF-385	Watering Place Brook	FW2-NTC1
OF-386	Watering Place Brook	FW2-NTC1
OF-387	Watering Place Brook	FW2-NTC1
OF-388	Watering Place Brook	FW2-NTC1
OF-389	Watering Place Brook	FW2-NTC1
OF-390	Watering Place Brook	FW2-NTC1
OF-391	Lake Manetta	FW2-NTC1
OF-392	Carasaljo Lake	FW2-NTC1
OF-393	Carasaljo Lake	FW2-NTC1
OF-394	Carasaljo Lake	FW2-NTC1
OF-395	Carasaljo Lake	FW2-NTC1
OF-396	Carasaljo Lake	FW2-NTC1
OF-397	South Branch Metedeconk River UNT	FW2-NTC1
OF-398	Carasaljo Lake	FW2-NTC1
OF-399	Lake Shenandoah	FW2-NTC1
OF-401	Cabinfield Branch	FW2-NTC1
OF-402	Cabinfield Branch	FW2-NTC1
OF-403	Cabinfield Branch	FW2-NTC1
OF-404	North Branch Metedeconk River	FW2-TMC1
OF-405	North Branch Metedeconk River	FW2-TMC1
OF-406	North Branch Metedeconk River	FW2-TMC1
OF-407	North Branch Metedeconk River	FW2-TMC1
OF-408	North Branch Metedeconk River	FW2-TMC1
OF-409	North Branch Metedeconk River	FW2-TMC1
OF-410	North Branch Metedeconk River	FW2-TMC1
OF-411	North Branch Metedeconk River	FW2-TMC1

Local Outfall ID	Receiving Surface Water Body	Water Quality Classification
OF-412	South Branch Metedeconk River	FW2-NTC1
OF-413	South Branch Metedeconk River	FW2-NTC1
OF-414	Cotterals Brook UNT	FW2-NTC1
OF-415	Green Branch	FW2-NT/SE1
OF-416	South Branch Metedeconk River	FW2-NTC1
OF-417	South Branch Metedeconk River UNT	FW2-NTC1
OF-418	South Branch Metedeconk River UNT	FW2-NTC1
OF-419	Watering Place Brook	FW2-NTC1
OF-434	South Branch Metedeconk River UNT	FW2-NTC1
OF-435	South Branch Metedeconk River UNT	FW2-NTC1
OF-436	South Branch Metedeconk River UNT	FW2-NTC1
OF-437	South Branch Metedeconk River UNT	FW2-NTC1
OF-438	South Branch Metedeconk River UNT	FW2-NTC1
OF-439	Cedar Bridge Branch UNT	FW2-NT
OF-440	Kettle Creek	FW2-NT/SE1
OF-441	Watering Place Brook	FW2-NTC1
OF-442	Watering Place Brook UNT	FW2-NTC1
OF-443	Cotterals Brook	FW2-NTC1
OF-444	Cabinfield Branch	FW2-NTC1
OF-445	North Branch Metedeconk River	FW2-TMC1
OF-446	Cabinfield Branch	FW2-NTC1
OF-447	Cedar Bridge Branch UNT	FW2-NT
OF-448	Wetlands	
OF-449	South Branch Metedeconk River UNT	FW2-NTC1
OF-450	Cabinfield Branch	FW2-NTC1
OF-451	Cabinfield Branch	FW2-NTC1
OF-452	Cotterals Brook	FW2-NTC1
OF-453	Cotterals Brook	FW2-NTC1
OF-454	Cotterals Brook	FW2-NTC1
OF-455	Cedar Bridge Branch	FW2-NT
OF-456	Cedar Bridge Branch UNT	FW2-NT
OF-457	Carasaljo Lake	FW2-NTC1
OF-458	Carasaljo Lake	FW2-NTC1
OF-459	Kettle Creek UNT	FW2-NT/SE1
OF-460	South Branch Metedeconk River	FW2-NTC1
OF-461	South Branch Metedeconk River	FW2-NTC1
OF-462	South Branch Metedeconk River	FW2-NTC1
OF-463	Schoolhouse Branch	FW2-NTC1
OF-464	Schoolhouse Branch	FW2-NTC1
OF-465	Kettle Creek	FW2-NT/SE1
OF-466	Wetlands	
OF-467	Cabinfield Branch	FW2-NTC1
OF-468	Cabinfield Branch	FW2-NTC1

Local Outfall ID	Receiving Surface Water Body	Water Quality Classification
OF-469	Cabinfield Branch	FW2-NTC1
OF-470	Cotterals Brook	FW2-NTC1

Figure 2: Township of Lakewood Stormwater Outfalls



Stormwater Interconnection(s)

The information utilized in this section was gathered using Municipal Stormwater Infrastructure data field collected by Remington & Vernick Engineers as part of the Outfall and MS4 Infrastructure Mapping Projects from 2020 and 2025. This data was processed using ArcGIS software. The findings are summarized below in Table 3 and Figure 3.

STORMWATER MAPPING IS BEING COMPLETED FOR LAKEWOOD TOWNSHIP PRIOR TO THE JANUARY 1 2026 FILING DEADLINE. MAPPING WILL BE FILED WITH NJDEP AND MADE AVAILABLE THROUGH LAKEWOOD TOWNSHIPS STORMWATER WEBLINK (BELOW).

[HTTPS://WWW.LAKEWOODNJ.GOV/DEPARTMENT/STORMWATER](https://www.lakewoodnj.gov/department/stormwater)

THE FINAL PHASE 1 WIP REPORT WILL BE REVISED TO INCLUDE DATA FROM THIS WORK ONCE IT IS COMPLETED

Interconnections from the permittee's MS4 into another entity

- There are 108 interconnections from the Township of Lakewood's MS4 infrastructure into other entities MS4 systems.
- All these interconnections are directed piped connection.
- Two of these interconnections convey stormwater to infrastructure owned and operated by the Township of Toms River.
- Seventeen of these interconnections convey stormwater to infrastructure owned and operated by The State of New Jersey.
- Seven of these interconnections convey stormwater to infrastructure owned and operated by private MS4s.
- 82 of these interconnections convey stormwater to infrastructure owned and operated by Ocean County.

Interconnection(s) into the permittee's MS4 from another entity (for Tier A permittees only)

- There are ten interconnections owned and operated by Ocean County that convey stormwater flow to infrastructure owned and operated by the Township of Lakewood.
- There are six interconnections owned and operated by private entities that convey stormwater flow to infrastructure owned and operated by the Township of Lakewood.
- There is one interconnection owned and operated by the school district that conveys stormwater flow to infrastructure owned and operated by the Township of Lakewood.
- All interconnections are directed piped connection.

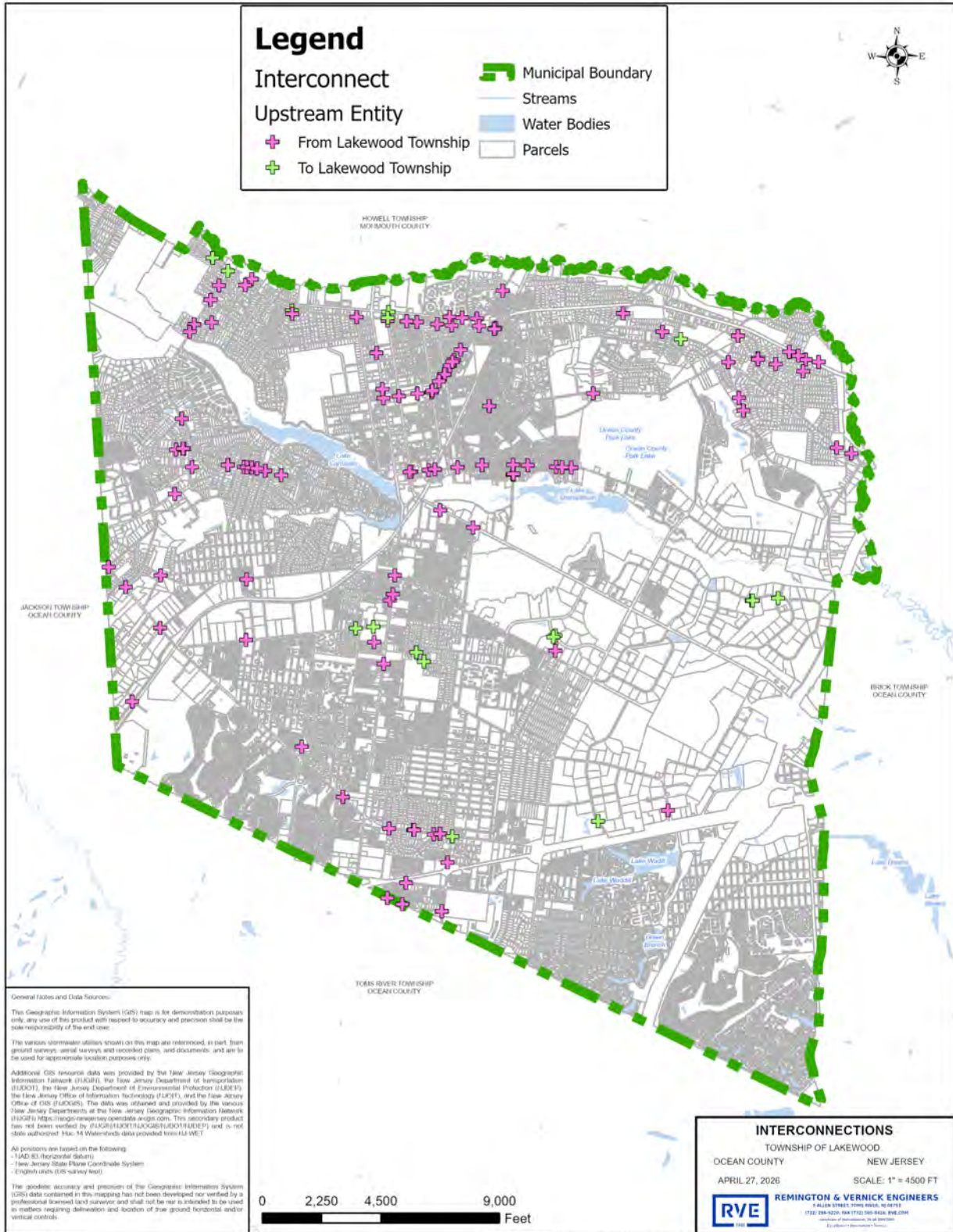
Table 3: Stormwater Interconnections from and Into the Township of Lakewood

Interconnection ID	Type	Upstream Entity	Downstream Entity
IC-001	Pipe	Ocean County	Lakewood Township
IC-002	Pipe	Ocean County	Lakewood Township
IC-003	Pipe	Lakewood Township	Ocean County
IC-004	Pipe	Lakewood Township	Ocean County
IC-005	Pipe	Lakewood Township	Ocean County
IC-006	Pipe	Lakewood Township	Ocean County
IC-007	Pipe	Private	Lakewood Township
IC-008	Pipe	Private	Lakewood Township
IC-009	Pipe	Private	Lakewood Township
IC-010	Pipe	Lakewood Township	Ocean County
IC-011	Pipe	Lakewood Township	Ocean County
IC-012	Pipe	Lakewood Township	Ocean County
IC-013	Pipe	Lakewood Township	Toms River Township
IC-014	Pipe	Lakewood Township	Toms River Township
IC-015	Pipe	Lakewood Township	Ocean County
IC-016	Pipe	Lakewood Township	Ocean County
IC-017	Pipe	Lakewood Township	NJDOT
IC-018	Pipe	Lakewood Township	Private
IC-019	Pipe	School	Lakewood Township
IC-020	Pipe	School	Lakewood Township
IC-021	Pipe	Lakewood Township	Ocean County
IC-022	Pipe	Lakewood Township	Ocean County
IC-023	Pipe	Lakewood Township	Ocean County
IC-024	Pipe	Lakewood Township	Ocean County
IC-025	Pipe	Lakewood Township	Ocean County
IC-026	Pipe	Lakewood Township	Ocean County
IC-027	Pipe	Lakewood Township	Ocean County
IC-028	Pipe	Lakewood Township	Ocean County
IC-029	Pipe	Lakewood Township	Ocean County
IC-030	Pipe	Lakewood Township	Ocean County
IC-031	Pipe	Lakewood Township	Ocean County
IC-032	Pipe	Lakewood Township	Ocean County
IC-033	Pipe	Lakewood Township	Ocean County
IC-034	Pipe	Lakewood Township	Ocean County
IC-035	Pipe	Lakewood Township	Ocean County
IC-036	Pipe	Lakewood Township	Ocean County
IC-037	Pipe	Lakewood Township	NJDOT
IC-038	Pipe	Lakewood Township	Ocean County
IC-039	Pipe	Lakewood Township	Ocean County
IC-040	Pipe	Lakewood Township	Ocean County
IC-041	Pipe	Lakewood Township	Ocean County
IC-042	Pipe	Lakewood Township	Ocean County

Interconnection ID	Type	Upstream Entity	Downstream Entity
IC-043	Pipe	Ocean County	Lakewood Township
IC-044	Pipe	Ocean County	Lakewood Township
IC-045	Pipe	Lakewood Township	Ocean County
IC-046	Pipe	Lakewood Township	Ocean County
IC-047	Pipe	Lakewood Township	Ocean County
IC-048	Pipe	Lakewood Township	Ocean County
IC-049	Pipe	Private	Lakewood Township
IC-050	Pipe	Private	Lakewood Township
IC-051	Pipe	Lakewood Township	Ocean County
IC-052	Pipe	Lakewood Township	Ocean County
IC-053	Pipe	Ocean County	Lakewood Township
IC-054	Pipe	Lakewood Township	Ocean County
IC-055	Pipe	Lakewood Township	Ocean County
IC-056	Pipe	Lakewood Township	Ocean County
IC-057	Pipe	Ocean County	Lakewood Township
IC-058	Pipe	Lakewood Township	Private
IC-059	Pipe	Ocean County	Lakewood Township
IC-060	Pipe	Lakewood Township	Ocean County
IC-061	Pipe	Lakewood Township	Ocean County
IC-062	Pipe	Lakewood Township	NJDOT
IC-063	Pipe	Lakewood Township	NJDOT
IC-064	Pipe	Lakewood Township	NJDOT
IC-065	Pipe	Lakewood Township	Ocean County
IC-066	Pipe	Lakewood Township	NJDOT
IC-067	Pipe	Lakewood Township	NJDOT
IC-068	Pipe	Lakewood Township	NJDOT
IC-069	Pipe	Lakewood Township	Ocean County
IC-070	Pipe	Lakewood Township	Ocean County
IC-071	Pipe	Lakewood Township	NJDOT
IC-072	Pipe	Lakewood Township	Ocean County
IC-073	Pipe	Lakewood Township	Ocean County
IC-074	Pipe	Lakewood Township	Ocean County
IC-075	Pipe	Lakewood Township	Ocean County
IC-076	Pipe	Lakewood Township	Ocean County
IC-077	Pipe	Lakewood Township	Ocean County
IC-078	Pipe	Lakewood Township	Ocean County
IC-079	Pipe	Lakewood Township	Ocean County
IC-080	Pipe	Lakewood Township	Ocean County
IC-081	Pipe	Lakewood Township	Ocean County
IC-082	Pipe	Lakewood Township	Ocean County
IC-083	Pipe	Ocean County	Lakewood Township
IC-084	Pipe	Lakewood Township	Ocean County
IC-085	Pipe	Lakewood Township	Ocean County

Interconnection ID	Type	Upstream Entity	Downstream Entity
IC-086	Pipe	Lakewood Township	Ocean County
IC-087	Pipe	Lakewood Township	Ocean County
IC-088	Pipe	Lakewood Township	Ocean County
IC-089	Pipe	Lakewood Township	Ocean County
IC-090	Pipe	Lakewood Township	NJDOT
IC-091	Pipe	Lakewood Township	NJDOT
IC-092	Pipe	Lakewood Township	NJDOT
IC-093	Pipe	Lakewood Township	NJDOT
IC-094	Pipe	Lakewood Township	NJDOT
IC-095	Pipe	Lakewood Township	NJDOT
IC-096	Pipe	Lakewood Township	NJDOT
IC-097	Pipe	Lakewood Township	Ocean County
IC-098	Pipe	Lakewood Township	Ocean County
IC-099	Pipe	Lakewood Township	Ocean County
IC-100	Pipe	Lakewood Township	Ocean County
IC-101	Pipe	Lakewood Township	Private
IC-102	Pipe	Lakewood Township	Ocean County
IC-103	Pipe	Lakewood Township	Ocean County
IC-104	Pipe	Lakewood Township	Ocean County
IC-105	Pipe	Private	Lakewood Township
IC-106	Pipe	Lakewood Township	Private
IC-107	Pipe	Lakewood Township	Private
IC-108	Pipe	Lakewood Township	Private
IC-109	Pipe	Lakewood Township	Private
IC-110	Pipe	Lakewood Township	Ocean County
IC-111	Pipe	Ocean County	Lakewood Township
IC-112	Pipe	Ocean County	Lakewood Township
IC-113	Pipe	Lakewood Township	Ocean County
IC-114	Pipe	Lakewood Township	Ocean County
IC-115	Pipe	Lakewood Township	Ocean County
IC-116	Pipe	Lakewood Township	Ocean County
IC-117	Pipe	Lakewood Township	Ocean County
IC-118	Pipe	Lakewood Township	Ocean County
IC-119	Pipe	Lakewood Township	Ocean County
IC-120	Pipe	Lakewood Township	Ocean County
IC-121	Pipe	Lakewood Township	Ocean County
IC-122	Pipe	Lakewood Township	Ocean County
IC-123	Pipe	Lakewood Township	Ocean County
IC-124	Pipe	Lakewood Township	Ocean County
IC-125	Pipe	Lakewood Township	Ocean County
IC-126	Pipe	Lakewood Township	Ocean County

Figure 3: Interconnections into and from the Permittee's MS4



Drainage Area(s) for Stormwater Outfalls and Stormwater Interconnections

The information utilized in this section was gathered using data from the 2019 New Jersey LiDAR flyover and Municipal Stormwater Infrastructure data field collected by Remington & Vernick Engineers as part of the Outfall and MS4 Infrastructure Mapping Projects from 2020 and 2025. This data was processed using QGIS, SAGA, PCRaster, and GDAL software. The findings are summarized below and in Table 4, Figure 4, and Figure 5. Drainage area calculation methods are also described below.

Storm Drain Inlets

STORMWATER MAPPING IS BEING COMPLETED FOR LAKEWOOD TOWNSHIP PRIOR TO THE JANUARY 1 2026 FILING DEADLINE. MAPPING WILL BE FILED WITH NJDEP AND MADE AVAILABLE THROUGH LAKEWOOD TOWNSHIPS STORMWATER WEBLINK (BELOW).

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MS4 Outfall Drainage Areas

- Utilizing QGIS, SAGA, PCRaster, and GDAL, the DEM from the LiDAR flyover was clipped to the Borough's Boundary with a 500-foot buffer.
- The clipped DEM was pre-processed to make it hydraulically correct with a max fill depth of 1 foot.
- Flow directions were determined from the pre-processed DEM.
- Outfall drainage areas were determined by calculating and vectorizing the upslope areas of the outfalls.

Drainage area of interconnection(s) from the permittee to another entity

- Utilizing QGIS, SAGA, PCRaster, and GDAL, the DEM from the LiDAR flyover was clipped to the Borough's Boundary with a 500-foot buffer.
- The clipped DEM was pre-processed to make it hydraulically correct with a max fill depth of 1 foot.
- Flow directions were determined from the pre-processed DEM.
- The interconnection pipe network was categorized by receiving interconnections.
- Interconnection drainage areas were determined by calculating and vectorizing the upslope areas of the categorized interconnections.

Figure 5: Interconnection Drainage Area(s)

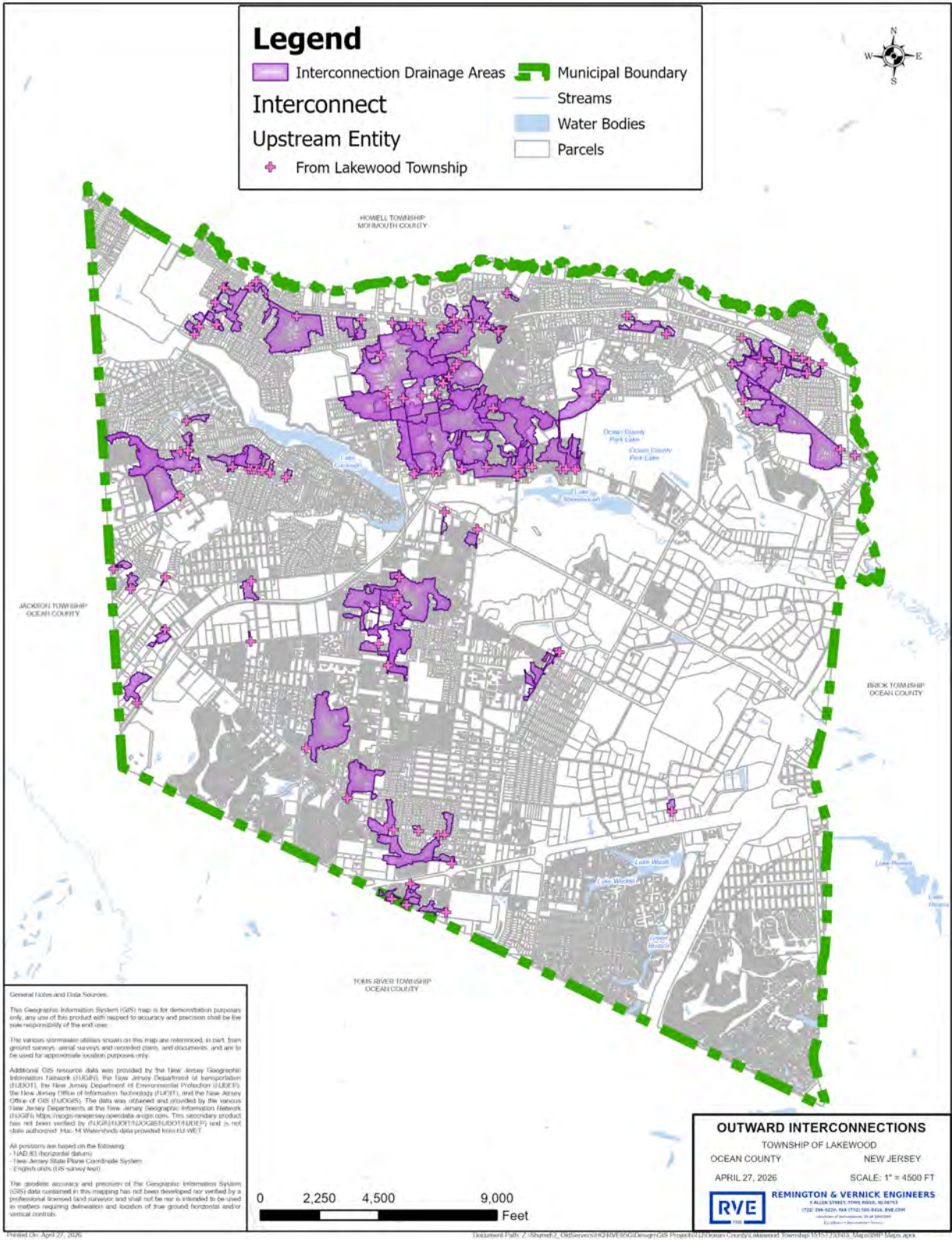


Table 4: Drainage Areas for Outfalls and Outward Interconnections

Drainage Area ID	Drainage Area (acres)	Outfall	Primary Contributing Drainage Area Type
OF-284	5.677902802	MS4 Outfall OF-284	Commercial
OF-151	4.985113343	MS4 Outfall OF-151	Residential
OF-143	6.610639496	MS4 Outfall OF-143	Residential
OF-126	0.089990465	MS4 Outfall OF-126	Residential
OF-171	4.886032465	MS4 Outfall OF-171	Residential
OF-119	8.807965709	MS4 Outfall OF-119	Residential
OF-124	4.645642695	MS4 Outfall OF-124	Residential
OF-140	0.028650294	MS4 Outfall OF-140	Residential
OF-123	10.72388424	MS4 Outfall OF-123	Residential
OF-293	33.47665027	MS4 Outfall OF-293	Commercial
OF-281	32.0355144	MS4 Outfall OF-281	Residential
OF-158	35.01023528	MS4 Outfall OF-158	Residential
OF-292	11.9436253	MS4 Outfall OF-292	Commercial
OF-081	33.4486125	MS4 Outfall OF-081	Commercial
OF-163	1.437829059	MS4 Outfall OF-163	Residential
OF-112	0.908997969	MS4 Outfall OF-112	Residential
OF-289	18.28139875	MS4 Outfall OF-289	Commercial
OF-297	5.508994489	MS4 Outfall OF-297	Commercial
OF-287	25.55561776	MS4 Outfall OF-287	Commercial
OF-128	0.005601447	MS4 Outfall OF-128	Residential
OF-139	37.92508468	MS4 Outfall OF-139	Residential
OF-127	8.236989116	MS4 Outfall OF-127	Residential
OF-148	23.32438371	MS4 Outfall OF-148	Residential
OF-240	0.175482235	MS4 Outfall OF-240	Residential
OF-242	6.642423567	MS4 Outfall OF-242	Residential
OF-153	5.426803964	MS4 Outfall OF-153	Residential
OF-160	3.812023348	MS4 Outfall OF-160	Residential
OF-283	3.946960959	MS4 Outfall OF-283	Commercial
OF-142	2.739663012	MS4 Outfall OF-142	Residential
OF-154	2.220748899	MS4 Outfall OF-154	Residential
OF-161	0.063177245	MS4 Outfall OF-161	Residential
OF-278	16.22785675	MS4 Outfall OF-278	Residential
OF-252	9.730948955	MS4 Outfall OF-252	Residential
OF-175	1.828373194	MS4 Outfall OF-175	Residential
OF-149	5.46610558	MS4 Outfall OF-149	Residential
OF-134	42.71957188	MS4 Outfall OF-134	Residential
OF-111	5.795678329	MS4 Outfall OF-111	Residential
OF-001	7.75701096	MS4 Outfall OF-001	Commercial
OF-176	28.57938977	MS4 Outfall OF-176	Residential
OF-129	11.51283122	MS4 Outfall OF-129	Residential
OF-279	4.839680371	MS4 Outfall OF-279	Residential

Drainage Area ID	Drainage Area (acres)	Outfall	Primary Contributing Drainage Area Type
OF-159	0.675757027	MS4 Outfall OF-159	Residential
OF-177	16.09529283	MS4 Outfall OF-177	Residential
OF-298	0.690081511	MS4 Outfall OF-298	Commercial
OF-174	10.43166858	MS4 Outfall OF-174	Residential
OF-115	3.483003466	MS4 Outfall OF-115	Residential
OF-150	6.57950924	MS4 Outfall OF-150	Residential
OF-286	21.5167562	MS4 Outfall OF-286	Commercial
OF-164	12.26297476	MS4 Outfall OF-164	Residential
OF-172	1.450778992	MS4 Outfall OF-172	Residential
OF-290	0.000734646	MS4 Outfall OF-290	Commercial
OF-167	25.04045557	MS4 Outfall OF-167	Residential
OF-130	11.14653465	MS4 Outfall OF-130	Residential
OF-145	105.660446	MS4 Outfall OF-145	Residential
OF-137	5.327355507	MS4 Outfall OF-137	Residential
OF-103	6.345926138	MS4 Outfall OF-103	Residential
OF-135	0.014233215	MS4 Outfall OF-135	Residential
OF-165	0.041781186	MS4 Outfall OF-165	Residential
OF-121	97.28415606	MS4 Outfall OF-121	Residential
OF-239	66.688471	MS4 Outfall OF-239	Residential
OF-118	120.8225288	MS4 Outfall OF-118	Residential
OF-241	0.709733799	MS4 Outfall OF-241	Residential
OF-156	252.6828789	MS4 Outfall OF-156	Residential
OF-201	191.5884727	MS4 Outfall OF-201	Residential
OF-114	8.176753935	MS4 Outfall OF-114	Residential
OF-152	2.072815215	MS4 Outfall OF-152	Residential
OF-157	17.85488357	MS4 Outfall OF-157	Residential
OF-088	6.122416282	MS4 Outfall OF-088	Residential
OF-079	6.955624735	MS4 Outfall OF-079	Commercial
OF-276	54.54639853	MS4 Outfall OF-276	Residential
OF-147	22.38031001	MS4 Outfall OF-147	Residential
OF-125	19.00991937	MS4 Outfall OF-125	Commercial
OF-401	6.499083138	MS4 Outfall OF-401	Residential
OF-392	11.61734355	MS4 Outfall OF-392	Residential
OF-398	0.021854825	MS4 Outfall OF-398	Residential
OF-442	2.427450619	MS4 Outfall OF-442	Residential
OF-467	7.827185488	MS4 Outfall OF-467	Residential
OF-308	9.723484389	MS4 Outfall OF-308	Residential
OF-459	2.784297259	MS4 Outfall OF-459	Residential
OF-391	2.640768228	MS4 Outfall OF-391	Residential
OF-447	21.80074896	MS4 Outfall OF-447	Commercial
OF-384	7.034790098	MS4 Outfall OF-384	Residential
OF-469	1.252433831	MS4 Outfall OF-469	Residential

Drainage Area ID	Drainage Area (acres)	Outfall	Primary Contributing Drainage Area Type
OF-309	5.759225919	MS4 Outfall OF-309	Residential
OF-353	11.75979266	MS4 Outfall OF-353	Commercial
OF-307	22.59863927	MS4 Outfall OF-307	Commercial
OF-411	1.191555002	MS4 Outfall OF-411	Residential
OF-419	27.86954251	MS4 Outfall OF-419	Residential
OF-461	0.433056842	MS4 Outfall OF-461	Commercial
OF-445	19.91044842	MS4 Outfall OF-445	Residential
OF-311	14.20644108	MS4 Outfall OF-311	Residential
OF-361	8.140691947	MS4 Outfall OF-361	Commercial
OF-396	24.37389447	MS4 Outfall OF-396	Residential
OF-385	69.84961163	MS4 Outfall OF-385	Residential
OF-456	7.502763026	MS4 Outfall OF-456	Commercial
OF-399	15.58033611	MS4 Outfall OF-399	Residential
OF-366	1.218270994	MS4 Outfall OF-366	Residential
OF-462	2.211476843	MS4 Outfall OF-462	Commercial
OF-358	0.007070679	MS4 Outfall OF-358	Commercial
OF-373	9.577172477	MS4 Outfall OF-373	Commercial
OF-443	36.1013717	MS4 Outfall OF-443	Commercial
OF-388	103.544767	MS4 Outfall OF-388	Residential
OF-410	6.14537282	MS4 Outfall OF-410	Residential
OF-468	14.03719569	MS4 Outfall OF-468	Residential
OF-403	1.588340504	MS4 Outfall OF-403	Residential
OF-312	40.10572544	MS4 Outfall OF-312	Residential
OF-386	93.39795591	MS4 Outfall OF-386	Residential
OF-372	59.26416721	MS4 Outfall OF-372	Residential
OF-322	0.038292295	MS4 Outfall OF-322	Commercial
OF-332	19.83731226	MS4 Outfall OF-332	Residential
OF-397	0.576949807	MS4 Outfall OF-397	Residential
OF-414	23.26935556	MS4 Outfall OF-414	Commercial
OF-451	2.547934614	MS4 Outfall OF-451	Residential
OF-321	0.405234015	MS4 Outfall OF-321	Commercial
OF-337	9.411831898	MS4 Outfall OF-337	Residential
OF-394	0.092745764	MS4 Outfall OF-394	Residential
OF-383	0.099081435	MS4 Outfall OF-383	Residential
OF-444	42.52388165	MS4 Outfall OF-444	Residential
OF-415	2.726995202	MS4 Outfall OF-415	Residential
OF-408	12.69506756	MS4 Outfall OF-408	Residential
OF-389	113.6536532	MS4 Outfall OF-389	Residential
OF-463	4.715796291	MS4 Outfall OF-463	Commercial
OF-357	0.019191842	MS4 Outfall OF-357	Commercial
OF-352	27.45218547	MS4 Outfall OF-352	Commercial
OF-320	0.148577076	MS4 Outfall OF-320	Commercial

Drainage Area ID	Drainage Area (acres)	Outfall	Primary Contributing Drainage Area Type
OF-449	8.74424355	MS4 Outfall OF-449	Residential
OF-455	10.91488525	MS4 Outfall OF-455	Commercial
OF-441	22.29810691	MS4 Outfall OF-441	Residential
OF-439	6.75335607	MS4 Outfall OF-439	Commercial
OF-413	8.164755433	MS4 Outfall OF-413	Commercial
OF-402	3.516534819	MS4 Outfall OF-402	Residential
OF-404	17.99037582	MS4 Outfall OF-404	Residential
OF-387	2.751875852	MS4 Outfall OF-387	Residential
OF-356	0.810191382	MS4 Outfall OF-356	Commercial
OF-393	1.6835608	MS4 Outfall OF-393	Residential
OF-299	2.168411962	MS4 Outfall OF-299	Commercial
OF-412	19.01681534	MS4 Outfall OF-412	Commercial
OF-314	34.67227416	MS4 Outfall OF-314	Residential
OF-435	25.89581452	MS4 Outfall OF-435	Residential
OF-319	13.59728785	MS4 Outfall OF-319	Residential
OF-466	8.848929754	MS4 Outfall OF-466	Residential
OF-405	14.30077415	MS4 Outfall OF-405	Residential
OF-417	23.69719691	MS4 Outfall OF-417	Residential
OF-434	4.640761478	MS4 Outfall OF-434	Residential
OF-336	1.814047068	MS4 Outfall OF-336	Residential
OF-446	1.090175903	MS4 Outfall OF-446	Residential
OF-454	0.675388604	MS4 Outfall OF-454	Residential
OF-409	40.45837918	MS4 Outfall OF-409	Residential
OF-395	36.86423826	MS4 Outfall OF-395	Residential
OF-460	1.686314834	MS4 Outfall OF-460	Commercial
OF-406	3.857486863	MS4 Outfall OF-406	Residential
OF-359	0.007070679	MS4 Outfall OF-359	Commercial
OF-368	8.627802037	MS4 Outfall OF-368	Residential
OF-437	10.78519316	MS4 Outfall OF-437	Residential
OF-416	34.21325355	MS4 Outfall OF-416	Residential
OF-313	0.042240291	MS4 Outfall OF-313	Commercial
OF-382	19.64138522	MS4 Outfall OF-382	Residential
OF-448	29.89345352	MS4 Outfall OF-448	Residential
OF-360	0.02525256	MS4 Outfall OF-360	Commercial
OF-438	1.94021673	MS4 Outfall OF-438	Residential
OF-204	10.66105792	MS4 Outfall OF-204	Residential
OF-133	0.28255225	MS4 Outfall OF-133	Residential
OF-381	0.045087236	MS4 Outfall OF-381	Residential
OF-170	18.32375228	MS4 Outfall OF-170	Residential
OF-109	4.512124253	MS4 Outfall OF-109	Commercial
OF-138	1.702935603	MS4 Outfall OF-138	Residential
OF-450	6.742154013	MS4 Outfall OF-450	Residential

Drainage Area ID	Drainage Area (acres)	Outfall	Primary Contributing Drainage Area Type
OF-105	17.79256794	MS4 Outfall OF-105	Residential
OF-078	1.3591376	MS4 Outfall OF-078	Commercial
OF-141	2.391913729	MS4 Outfall OF-141	Residential
OF-162	1.316985468	MS4 Outfall OF-162	Residential
OF-271	16.93721179	MS4 Outfall OF-271	Residential
OF-166	26.67517042	MS4 Outfall OF-166	Residential
OF-407	4.373096974	MS4 Outfall OF-407	Residential
OF-310	15.08118911	MS4 Outfall OF-310	Residential
OF-272	1.077524234	MS4 Outfall OF-272	Residential
OF-457	1.275020041	MS4 Outfall OF-457	Residential
OF-465	16.95211825	MS4 Outfall OF-465	Commercial
OF-458	2.334247979	MS4 Outfall OF-458	Residential
OF-144	13.78280215	MS4 Outfall OF-144	Residential
OF-418	10.55195256	MS4 Outfall OF-418	Residential
OF-280	3.191284671	MS4 Outfall OF-280	Residential
OF-168	31.53750859	MS4 Outfall OF-168	Residential
OF-106	5.118827159	MS4 Outfall OF-106	Residential
OF-136	2.395679276	MS4 Outfall OF-136	Residential
OF-178	67.95587164	MS4 Outfall OF-178	Residential
OF-390	11.99804873	MS4 Outfall OF-390	Residential
OF-132	2.834981062	MS4 Outfall OF-132	Residential
OF-082	35.12162105	MS4 Outfall OF-082	Commercial
OF-296	14.14148375	MS4 Outfall OF-296	Commercial
OF-470	99.93447221	MS4 Outfall OF-470	Residential
OF-440	2.896699296	MS4 Outfall OF-440	Residential
OF-131	7.570782021	MS4 Outfall OF-131	Residential

Drainage Area ID	Drainage Area (acres)	Interconnection	Primary Contributing Drainage Area Type
IC-003	2.26445849	Interconnection to Ocean County MS4	Residential
IC-004	3.69393395	Interconnection to Ocean County MS4	Residential
IC-005	2.996137751	Interconnection to Ocean County MS4	Residential
IC-006	3.100820302	Interconnection to Ocean County MS4	Residential
IC-010	3.225978345	Interconnection to Ocean County MS4	Residential
IC-011	2.610644808	Interconnection to Ocean County MS4	Residential
IC-012	57.40833013	Interconnection to Ocean County MS4	Residential
IC-013	3.296228385	Interconnection to Toms River Township MS4	Residential
IC-014	3.453161914	Interconnection to Toms River Township MS4	Residential
IC-015	4.859218538	Interconnection to Ocean County MS4	Residential
IC-016	52.96275405	Interconnection to Ocean County MS4	Residential
IC-017	5.028455663	Interconnection to NJDOT MS4	Residential
IC-018	6.463528089	Interconnection to Private MS4	Residential

Drainage Area ID	Drainage Area (acres)	Interconnection	Primary Contributing Drainage Area Type
IC-021	4.379149414	Interconnection to Ocean County MS4	Residential
IC-022	7.269433142	Interconnection to Ocean County MS4	Residential
IC-023	1.698348878	Interconnection to Ocean County MS4	Residential
IC-024	0.97842189	Interconnection to Ocean County MS4	Residential
IC-025	11.74878211	Interconnection to Ocean County MS4	Residential
IC-026	14.79322513	Interconnection to Ocean County MS4	Residential
IC-027	4.084301617	Interconnection to Ocean County MS4	Residential
IC-028	2.864009126	Interconnection to Ocean County MS4	Residential
IC-029	13.86457929	Interconnection to Ocean County MS4	Residential
IC-030	1.778607413	Interconnection to Ocean County MS4	Residential
IC-031	2.33618491	Interconnection to Ocean County MS4	Residential
IC-032	58.53367761	Interconnection to Ocean County MS4	Residential
IC-033	20.88384863	Interconnection to Ocean County MS4	Residential
IC-034	13.97063424	Interconnection to Ocean County MS4	Residential
IC-035	11.66604761	Interconnection to Ocean County MS4	Residential
IC-036	0.895594315	Interconnection to Ocean County MS4	Residential
IC-037	6.588150663	Interconnection to NJDOT MS4	Residential
IC-038	8.37052293	Interconnection to Ocean County MS4	Residential
IC-039	18.83737396	Interconnection to Ocean County MS4	Residential
IC-040	1.151882094	Interconnection to Ocean County MS4	Residential
IC-041	3.359964817	Interconnection to Ocean County MS4	Residential
IC-042	168.9295639	Interconnection to Ocean County MS4	Residential
IC-045	11.63720185	Interconnection to Ocean County MS4	Residential
IC-046	1.031040944	Interconnection to Ocean County MS4	Residential
IC-047	1.738753592	Interconnection to Ocean County MS4	Residential
IC-048	1.123966913	Interconnection to Ocean County MS4	Residential
IC-051	3.848479381	Interconnection to Ocean County MS4	Residential
IC-052	13.62109375	Interconnection to Ocean County MS4	Residential
IC-054	58.44933218	Interconnection to Ocean County MS4	Residential
IC-055	28.72752304	Interconnection to Ocean County MS4	Residential
IC-056	4.505235548	Interconnection to Ocean County MS4	Residential
IC-058	4.417994244	Interconnection to Private MS4	Residential
IC-060	0.935078154	Interconnection to Ocean County MS4	Residential
IC-061	12.69154518	Interconnection to Ocean County MS4	Residential
IC-062	99.03526686	Interconnection to NJDOT MS4	Residential
IC-063	5.301831518	Interconnection to NJDOT MS4	Residential
IC-064	36.00602316	Interconnection to NJDOT MS4	Residential
IC-065	7.071802561	Interconnection to Ocean County MS4	Residential
IC-066	25.56791861	Interconnection to NJDOT MS4	Residential
IC-067	18.35479555	Interconnection to NJDOT MS4	Residential
IC-068	32.44100279	Interconnection to NJDOT MS4	Residential
IC-069	24.08841459	Interconnection to Ocean County MS4	Residential

Drainage Area ID	Drainage Area (acres)	Interconnection	Primary Contributing Drainage Area Type
IC-071	48.59426178	Interconnection to NJDOT MS4	Residential
IC-072	2.757569585	Interconnection to Ocean County MS4	Residential
IC-073	44.34877393	Interconnection to Ocean County MS4	Residential
IC-074	1.168776928	Interconnection to Ocean County MS4	Residential
IC-075	5.63654023	Interconnection to Ocean County MS4	Residential
IC-076	5.893285833	Interconnection to Ocean County MS4	Residential
IC-077	15.00805502	Interconnection to Ocean County MS4	Residential
IC-078	11.83981785	Interconnection to Ocean County MS4	Residential
IC-079	29.84138403	Interconnection to Ocean County MS4	Residential
IC-080	2.550780076	Interconnection to Ocean County MS4	Residential
IC-081	4.354547928	Interconnection to Ocean County MS4	Residential
IC-082	2.666669843	Interconnection to Ocean County MS4	Residential
IC-084	23.00780352	Interconnection to Ocean County MS4	Residential
IC-085	23.03452522	Interconnection to Ocean County MS4	Residential
IC-086	32.08512822	Interconnection to Ocean County MS4	Residential
IC-087	4.091920403	Interconnection to Ocean County MS4	Residential
IC-088	0.002112021	Interconnection to Ocean County MS4	Residential
IC-089	40.15888462	Interconnection to Ocean County MS4	Residential
IC-090	26.53928987	Interconnection to NJDOT MS4	Residential
IC-091	47.53614395	Interconnection to NJDOT MS4	Residential
IC-092	8.135448115	Interconnection to NJDOT MS4	Residential
IC-093	25.4648161	Interconnection to NJDOT MS4	Residential
IC-094	41.68172469	Interconnection to NJDOT MS4	Residential
IC-095	67.79787292	Interconnection to NJDOT MS4	Residential
IC-096	40.4851006	Interconnection to NJDOT MS4	Residential
IC-097	1.312026893	Interconnection to Ocean County MS4	Residential
IC-098	0.559319897	Interconnection to Ocean County MS4	Residential
IC-099	1.361889171	Interconnection to Ocean County MS4	Residential
IC-100	0.677409182	Interconnection to Ocean County MS4	Residential
IC-101	0.157116361	Interconnection to Private MS4	Residential
IC-102	0.421487266	Interconnection to Ocean County MS4	Commercial
IC-103	0.010468376	Interconnection to Ocean County MS4	Residential
IC-104	3.70017692	Interconnection to Ocean County MS4	Residential
IC-106	2.029294302	Interconnection to Private MS4	Commercial
IC-107	12.15648448	Interconnection to Private MS4	Residential
IC-108	10.35573685	Interconnection to Private MS4	Residential
IC-109	10.35573685	Interconnection to Private MS4	Residential
IC-110	1.742789047	Interconnection to Ocean County MS4	Residential
IC-113	4.770233108	Interconnection to Ocean County MS4	Residential
IC-114	25.59860351	Interconnection to Ocean County MS4	Residential
IC-115	6.240846491	Interconnection to Ocean County MS4	Residential
IC-116	10.3978861	Interconnection to Ocean County MS4	Residential

Drainage Area ID	Drainage Area (acres)	Interconnection	Primary Contributing Drainage Area Type
IC-117	26.2892194	Interconnection to Ocean County MS4	Residential
IC-118	38.58581622	Interconnection to Ocean County MS4	Residential
IC-119	1.750229158	Interconnection to Ocean County MS4	Residential
IC-120	12.06022798	Interconnection to Ocean County MS4	Residential
IC-121	0.681266481	Interconnection to Ocean County MS4	Residential
IC-122	3.475015805	Interconnection to Ocean County MS4	Residential
IC-123	2.376946983	Interconnection to Ocean County MS4	Residential
IC-124	1.163912523	Interconnection to Ocean County MS4	Residential
IC-125	4.376483418	Interconnection to Ocean County MS4	Residential
IC-126	42.83809226	Interconnection to Ocean County MS4	Residential

TMDLs and Water Quality Impairments

In accordance with Section 305(b) and 303(d) of the Federal Clean Water Act, New Jersey is required to assess the overall water quality of the state's waters and identify those waterbodies with a water quality impairment for which total maximum daily loads (TMDLs) may be necessary. NJDEP fulfills its assessment obligation under the Clean Water Act through the Integrated Water Quality Monitoring and Assessment Report (i.e., Integrated Report), which includes the Integrated List of Waterbodies, issued biennially. A TMDL represents the assimilative or carrying capacity of a waterbody, taking into consideration point and nonpoint sources of pollutants of concern, the natural background, and surface water withdrawals. A TMDL can be thought of as a "budget" for the total amount of a pollutant that can enter a waterbody while still maintaining surface water quality standards. TMDLs have been developed for various pollutants in various waterbodies throughout the state. Tier A MS4 discharges are considered point sources under the Clean Water Act;

Lakewood Township's surface water quality is impaired by pollutants from urban stormwater runoff, including nutrients, sediment, oils, and trash, which are carried from impervious surfaces like roads and parking lots. The Metedeconk River also has documented impairments for dissolved oxygen and temperature, as noted in the *Metedeconk River Watershed Protection and Restoration Plan*.

Table 5: TMDLs and Impairments for Subwatersheds within or bordering (Lakewood Township)

HUC 14	Subwatershed Name	TMDL(s)	Impairment(s)
02040301020010	Metedeconk River North Branch including Haystack Brook, Muddy Ford Brook, Titmouse Creek, Snipe Creek	<u>Stream sheds</u> Fecal Coliform (2003)	Dissolved Oxygen, Turbidity
02040301020020	Metedeconk River South Branch	<u>Stream sheds</u> Fecal Coliform (2003)	Dissolved Oxygen, Turbidity
02040301060050	Toms River/Dove Mill Branch	<u>Stream sheds</u> Fecal Coliform (2003)	PH
02040301020040	Metedeconk R SB (Rt 9 to Bennetts Pond)	<u>Stream sheds</u> Mercury (2010)	Total Phosphorous
02040301020020	Lake Carasaljo	<u>Lakebeds</u> Fecal Coliforms (2007)	Dissolved Oxygen, Turbidity
02040301020010	Ocean County Park Lake	<u>Lakebeds</u> Fecal Coliforms (2007)	Dissolved Oxygen, Turbidity
02040301020050	Barnegat Bay-D, Metedeconk-A	<u>Shellfish</u> Total Coliforms (2006)	Dissolved Oxygen, Turbidity
02040301020050	Barnegat Bay-E	<u>Shellfish</u> Total Coliforms (2006)	Dissolved Oxygen, Turbidity
02040301020050	Barnegat Bay-L, Toms River-A	<u>Shellfish</u> Total Coliforms (2006)	Dissolved Oxygen, Turbidity

Dissolved oxygen (DO) refers to the concentration of oxygen gas incorporated into the water. Oxygen enters the water by direct absorption from the atmosphere and is enhanced by turbulence. Running water, such as that of a swift moving stream, normally contains more dissolved oxygen than the still water of a pond or lake. Water also absorbs oxygen released by aquatic plants during photosynthesis. Sufficient DO is essential to growth and reproduction of aerobic aquatic life (e.g., see Murphy 2006, Giller and Malmqvist 1998, Allan 1995; <https://www.epa.gov/caddis-vol2/dissolved-oxygen>). Low levels of oxygen (hypoxia) or no oxygen levels (anoxia) can occur when excess organic materials are decomposed by microorganisms. During this decomposition process, the DO in the water is consumed. In some water bodies, DO levels fluctuate periodically, seasonally, and even as part of the natural daily ecology of the aquatic resource. As DO levels drop, some sensitive animals may move away, decline in health, or even die.

DO is considered an important measure of water quality as it is a direct indicator of an aquatic resource's ability to support aquatic life. While each organism has its own DO tolerance range, generally, DO levels below 3 milligrams per liter (mg/L) are of concern and waters with levels below 1 mg/L are considered hypoxic and are usually devoid of life. Stormwater runoff containing nutrients such as nitrate, phosphorus, and organic TSS matter and animal and pet waste cause the levels of dissolved oxygen to decrease in the receiving waters. An increase in these materials transported via stormwater runoff will have a greater impact on receiving waters.

Pathogens, including fecal coliform, and total coliform, enter the receiving waters when stormwater comes into contact with sources of these pathogens, such as pet waste, animal waste from geese and other wildlife, some farming activities, illicit discharges, failing sewage conveyance systems and septic systems, combined sewage overflows, and sanitary sewer overflows (SSOs).

While sewage treatment plants contribute a steady input of treated sewage to their receiving waters, stormwater runoff is the primary contributor to pathogen loads in the surface waters of the state. Many of these pathogens affect the designated uses of the receiving waters and are harmful to human or animal health when ingested causing intestinal disease. Pathogens can attack the immune system and cause infections that may result in abdominal issues, respiratory problems, fever, headache, skin rashes, etc. (Water Quality Topics: Pathogens | US EPA).

When receiving surface waters include shellfish harvesting as a designated use, pathogens also pose additional concerns. Proximity to potential sources such as marinas, development served by septic systems and concentrated stormwater outfall locations warrant precautionary closures of shellfish waters on a seasonal or full-time basis. The National Shellfish Sanitation Program has established criteria for pathogens that are used to determine support of the shell fishing use.

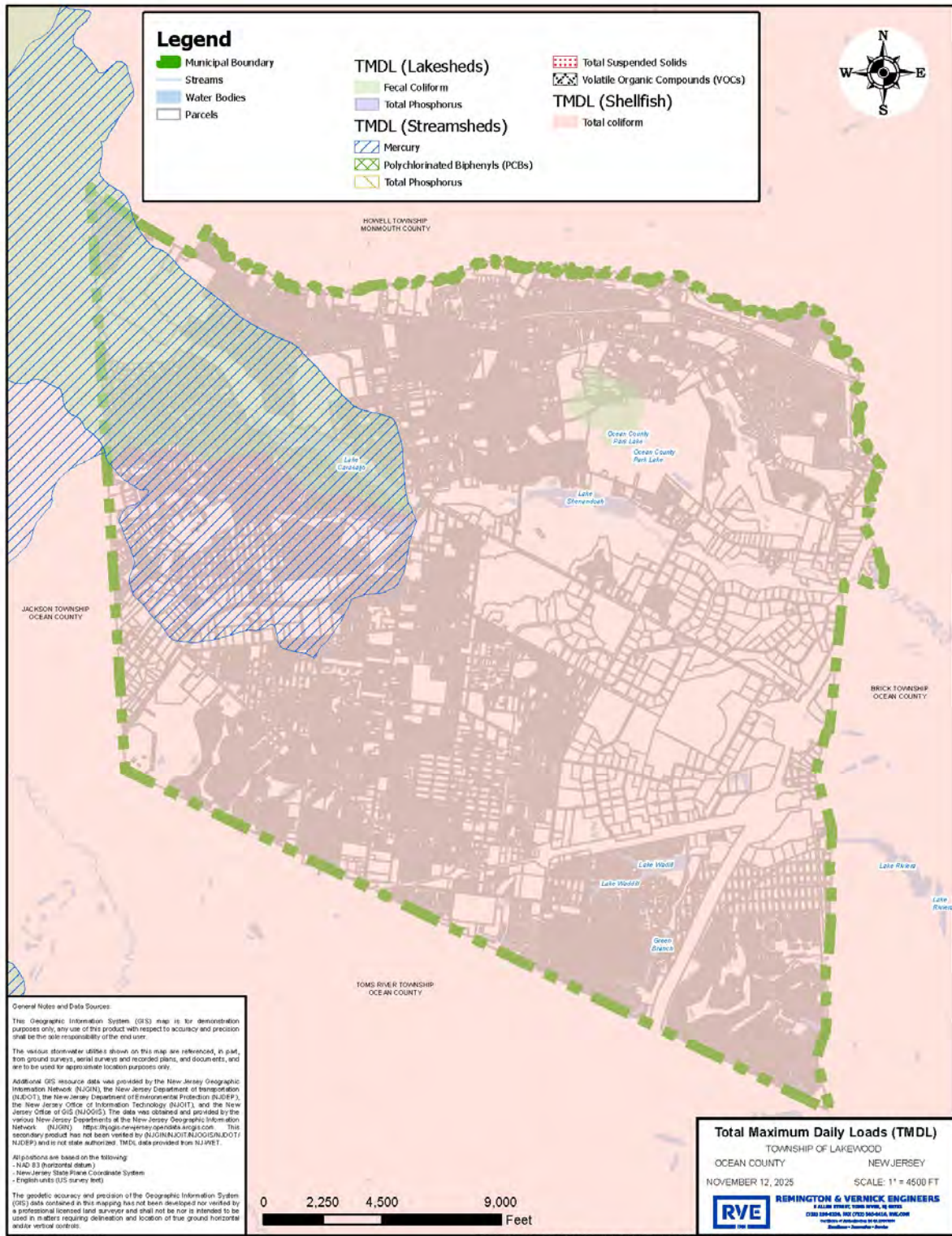
pH (scientifically referred to as the Potential of Hydrogen) measures the concentration of hydrogen ions in a solution and is the indicator of the acidity or alkalinity of a substance, representing its ability to donate or accept hydrogen ions. pH values can range from 0 to 14, with 0 representing the most acidic and 14 representing the most basic. Fluctuations in pH and pH levels outside of the typical levels for a waterbody can negatively impact aquatic life, including reduced biodiversity if those values exceed critical thresholds. These impacts happen when the receiving waters experience even slight changes in pH levels that negatively impact reproduction, growth, and the ability to sustain life for species that live within them.

Pure water has a neutral pH equal to 7 but when chemicals or pollutants are mixed with stormwater runoff, the mixture can become either acidic or basic. Such is the case when stormwater comes into contact with ammonia, sulfur, battery acids, lime, cement, wet or fresh concrete, fertilizers, compost, and other pollutants. This mixing can happen on the ground with runoff or can happen in the atmosphere with air pollutants causing “acid rain.” When acid rain or pH impacted storm water runoff collect in streams and ponds, the pH of that water body is changed.

Phosphorus is a key nutrient for plant growth and is often the limiting nutrient in a freshwater setting. **Total phosphorous** is the sum of particulate and dissolved phosphorous which includes the total amount of phosphorous in both organic and inorganic forms. High concentrations of phosphorus in receiving waters may result from stormwater runoff due to poor agricultural practices, urban areas, leaking septic systems, illicit discharges or SSOs. Additional stormwater runoff sources of phosphorous include the breakdown of plant and leaf litter (including grass clippings), soil particles, pet and animal waste, fertilizer from lawns, and atmospheric deposition of phosphorus particles. Contribution from runoff from lawns and roads accounts for the greatest loading in many receiving waters. An excess of phosphorus into a water body can have a detrimental effect on designated uses related to both public health and aquatic health. For instance, too much phosphorus in a surface water can cause increased growth of algae and large aquatic plants causing significant swings in pH and dissolved oxygen, which can in turn result in the violation of surface water quality criteria for these parameters and adversely affect the aquatic community.

Turbidity refers to water's transparency and the amount of TSS that the water contains and is measured by how well light can pass through water. Turbid waters containing a larger amount of TSS have a low transparency and visibility, which can allow the waterbody to absorb more heat from the sunlight, thus increasing the temperature and decreasing the dissolved oxygen. High turbidity can negatively impact a waterbody's designated uses by reducing the ability of the waterbody to support aquatic life due to these effects, reducing the aesthetic quality of the receiving water, having a harmful impact on recreation and tourism, and increasing the cost of water treatment for drinking and industrial uses such as food processing. Municipal stormwater runoff can create turbid conditions in water when it picks up particulate debris from hard surfaces and transports it to water bodies. Turbidity in stormwater runoff is usually made up of rock and soil fragments, dirt and debris from roads and vehicles, and other materials as noted under TSS.

Figure 6: TMDLs within the Permittee's MS4



Overburdened Communities

Overburdened communities with limited financial resources have less capacity to invest in adequate stormwater management systems, increasing the vulnerability of the community to flooding. Flooding in overburdened communities can also lead to public health issues since these communities are already more susceptible to health disparities. This dataset was extracted from NJDEP’s GIS Open Data source in October, 2025. The following table is a summary of low-income populations by watershed (obtained using NJ WET tool).

Table 6: Overburdened Communities Within Township of Lakewood

HUC-14	Watershed	Watershed Pop. Poverty	% of Low Income
02040301020050	Metedeconk River, NB (Confluence to Route 9)	3707	43.2%
02040301030040	Metedeconk River, SB (Route 9 to Bennett’s Pond)	2380	59.8%
02040301020020	Metedeconk River, NB (Route 9 to I-195)	1352	41.3%
02040301040020	Metedeconk R (Beaverdam Creek to Confluence)	8688	51.8%
02040301050010	Kettle Creek (above Lake Riviera outlet)	636	38.5%
02040301060070	Toms River (Rt 70 to Hope Chapel Road)	1784	45.3%
02040301030050	Metedeconk R SB (confluence to Rt 9)	7647	45.1%
02040301050020	Kettle Creek (below Lake Riviera outlet)	641	39.2%
02040301080080	Toms River (Oak Ridge Parkway to Rt 70)	1230	78.6%

Figure 7: Overburdened Communities within the Township of Lakewood



Impervious Area

NJDEP's Open Data impervious surface GIS data layer depicts surfaces throughout Lakewood Township that have been covered with materials that are highly resistant to infiltration by water, rendering them impervious. These impervious cover values were used to estimate the impervious coverage for Lakewood Township. NJWET data was used in November, 2025 to obtain data for Lakewood Township.

Impervious cover can have considerable impacts on ecosystem and stream health. Due to an increase in stormwater runoff caused by impervious cover, the potential for pollutants to be carried to streams and rivers increases, which in turn can impact stream quality. *Additionally*, stormwater runoff discharging into streams increases the volume of water traveling within those streams. Increases in stream volume can lead to changes in stream conditions as it reaches equilibrium, such as increases in erosion, sediment load, and other stream attributes.

Table 7: Impervious Coverage by HUC14 Sub watersheds within the Township of Lakewood

HUC14	Subwatershed Name	HUC14 Acres	class	Impervious Acres	HUC14 % Impervious
02040301020020	Metedeconk R NB(Rt 9 to I-195)	494.42925	Overall	168.2550634	34.03%
			Building	48.89100394	9.89%
			Other	69.64609297	14.09%
			Road	49.71796653	10.06%
02040301020050	Metedeconk R NB (confluence to Rt 9)	3042.5114	Overall	873.934515	28.72%
			Building	233.7459459	7.68%
			Other	386.1915945	12.69%
			Road	253.9969746	8.35%
02040301030040	Metedeconk R SB (Rt 9 to Bennetts Pond)	2925.8243	Overall	805.9773787	27.55%
			Building	223.6405163	7.64%
			Other	357.5488253	12.22%
			Road	224.7880371	7.68%
02040301030050	Metedeconk R SB (confluence to Rt 9)	3041.6693	Overall	1086.938177	35.73%
			Building	285.8235831	9.40%
			Other	563.4096611	18.52%
			Road	237.7049325	7.81%
02040301040020	Metedeconk R (Beaverdam Ck to confl)	1569.6187	Overall	472.9327937	30.13%
			Building	108.3516958	6.90%
			Other	260.69158	16.61%
			Road	103.8895179	6.62%
02040301050010	Kettle Creek (above Lake Riviera outlet)	2847.4957	Overall	852.4826529	29.94%
			Building	266.4970375	9.36%
			Other	304.1480256	10.68%
			Road	281.8375899	9.90%
02040301050020	Kettle Creek (below Lake Riviera outlet)	552.29908	Overall	241.1422807	43.66%
			Building	108.7852911	19.70%
			Other	45.26605451	8.20%
			Road	87.09093508	15.77%
02040301060070	Toms River (Rt 70 to Hope Chapel Road)	1287.7246	Overall	317.6962945	24.67%
			Building	103.9496039	8.07%
			Other	143.1590507	11.12%
			Road	70.58763989	5.48%
02040301060080	Toms River (Oak Ridge Parkway to Rt 70)	298.28143	Overall	137.5237605	46.11%
			Building	45.49738377	15.25%
			Other	58.38975654	19.58%
			Road	33.63662019	11.28%

Non-Municipally Owned or Operated Stormwater Facilities

STORMWATER MAPPING IS BEING COMPLETED FOR LAKEWOOD TOWNSHIP PRIOR TO THE JANUARY 1 2026 FILING DEADLINE. MAPPING WILL BE FILED WITH NJDEP AND MADE AVAILABLE THROUGH LAKEWOOD TOWNSHIPS STORMWATER WEBLINK (BELOW).

[HTTPS://WWW.LAKEWOODNJ.GOV/DEPARTMENT/STORMWATER](https://www.lakewoodnj.gov/department/stormwater)

THE FINAL PHASE 1 WIP REPORT WILL BE REVISED TO INCLUDE DATA FROM THIS WORK ONCE IT IS COMPLETED

Conclusion

This Watershed Inventory Report shall serve as a record of the known stormwater infrastructure, water quality data, and additional relevant information within Lakewood Township. All the datasets contained in this report have been compiled into a GIS digital map that can be utilized to look at the data in far more detail than the static maps included will provide. This report will be followed by a Watershed Assessment Report, which will provide an assessment of potential water quality improvement projects that can be done to address water quality issues that have been identified in this report.

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